

Application No. 10/577,914
Amendment dated August 26, 2011
Reply to Office Action of June 8, 2011

AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A process for producing metal-matrix composite materials comprising at least one portion of magnesium or of a magnesium alloy as a metal component, the process comprising the steps of:

thixomolding a granulate of magnesium or of a magnesium alloy and a granulate of a silicon or of a silicon alloy to produce a Mg_2Si phase with a volumetric content of at least 2% as a matrix component dispersed into and thereby forming the metal-matrix composite material, wherein the step of thixomolding includes shearing to form an at least partially liquid melt, wherein after adding the granulate of the silicon or of the silicon alloy to the granulate of magnesium or of a magnesium alloy, a heating rate of the thixomolding step is reduced when a melt first forms.

2. (Canceled)

3. (Previously presented) The process as claimed in claim 1, wherein the granulate of silicon or of the silicon alloy and the granulate of magnesium or of the a magnesium alloy are processed jointly.

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4. (Previously presented) The process as claimed in claim 3, wherein a size of Mg_2Si phase crystallites which form the metal-matrix composite material or a silicon content of the metal-matrix composite material is determined via the size or amount of the granulate of silicon or of the silicon alloy.
5. (Previously presented) The process as claimed in claim 1, wherein in the step of thixomolding includes producing the cast body from the metal-matrix composite materials which is then further processed.
6. (Previously presented) The process as claimed in claim 5, wherein the cast body is formed from the metal-matrix composite materials subsequently in at least one process step.
7. (Previously presented) The process as claimed in claim 6, wherein the cast body is formed from the metal-matrix composite materials subsequently in at least one of a forging process or an extrusion process.
8. (Currently amended) The process as claimed in claim 1, further including the step of adding at least ~~approximately~~ 2% by weight silicon or silicon alloy Si and at most ~~approximately~~ 15% by weight silicon or silicon alloy Si.

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9. (Currently amended) The process as claimed in claim 1, wherein a Mg_2Si phase with a volumetric content of at least ~~approximately~~ 5% to at most ~~approximately~~ 40% is dispersed into a metal matrix.

10. (Previously presented) The process as claimed in claim 1, wherein the granulate of magnesium or of the magnesium alloy is one of standard magnesium alloys AZ91, AM50, MR1230D, MR1253M or a magnesium die casting alloy.

11-14. (Canceled)

15. (Previously presented) The process as claimed in claim 3, wherein an amount and a size of Mg_2Si phase crystallites which form the metal-matrix composite material and a silicon content of the metal-matrix composite material are determined via a size and an amount of the granulate of silicon or of the silicon alloy.

16. (Previously presented) The process as claimed in claim 3, wherein an amount of Mg_2Si phase crystallites which form the metal-matrix composite material and a silicon content of the metal-matrix composite material are determined via the amount of the granulate of silicon or of the silicon alloy.